



# **POLICY ISSUES ON FISHERIES**

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Laguna Lake Development Authority  
Philippines

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# Laguna de Bay is a multi-use resource

- **President Corazon Aquino's administration:**
- **(1986-1992)**

## **DOMINANT USE IS FOR FISHERY**

- **Current water quality classification:**
- **(intended and beneficial use)**

**Class C – for fishery**

**Aquaculture**

**Open water or capture fishery**



## **Zoning and Management Plan or ZOMAP**

- **Initially implemented in 1983.  
(aquaculture was introduced in the early seventies)**
- **Considered by far as the most feasible management system for equitable allocation of the lake's fishery resource.**
- **Fish pen belts and fish cage belts were delineated**
- **Provision of navigational lanes for easy access of municipal fishermen to their traditional fishing grounds.**





# Embodied in the 1996 Laguna de Bay Master Plan as per Executive Order 349 (1996)

## Area allocation:

### Fishpens- 10,000 hectares

- Corporation: 50 has.
- Cooperative: 25 has.
- Individual: 5 has.

### Fishcages – 5,000 hectares

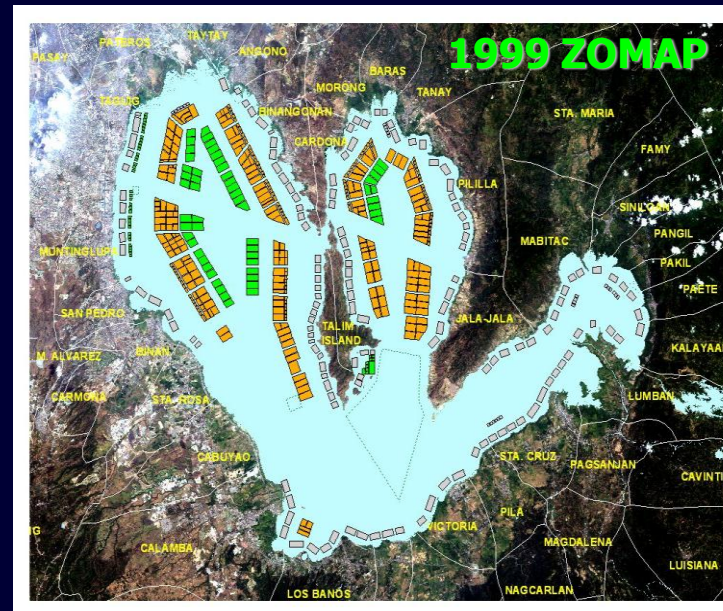
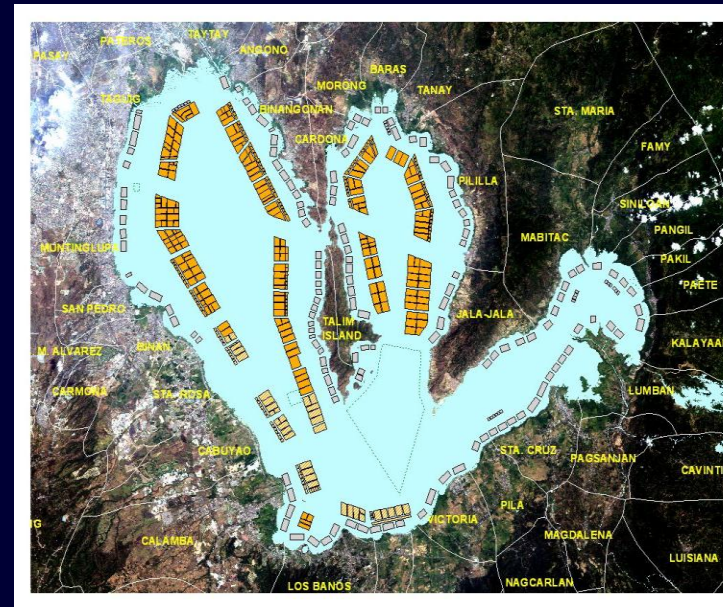
One (1) ha. per fishcage

## Mandatory distance between structures

Fishpen - 40 meters

Fishcage - 20 meters

## No obstruction – 200 meters from the shore



# Profile of Fishpens and Fishcages in Laguna de Bay as of 30 August 2013

Type of Aqua-Structure	Allocated Area (Has) per ZOMAP	Total Area Occupied	% of Allocated Area in the ZOMAP
Fishpens	10,000	11,009.6	111 %
Fishcages	5,000	2,647	52.94 %
<b>TOTAL</b>	<b>15,000</b>	<b>12,960</b>	<b>86.4 %</b>



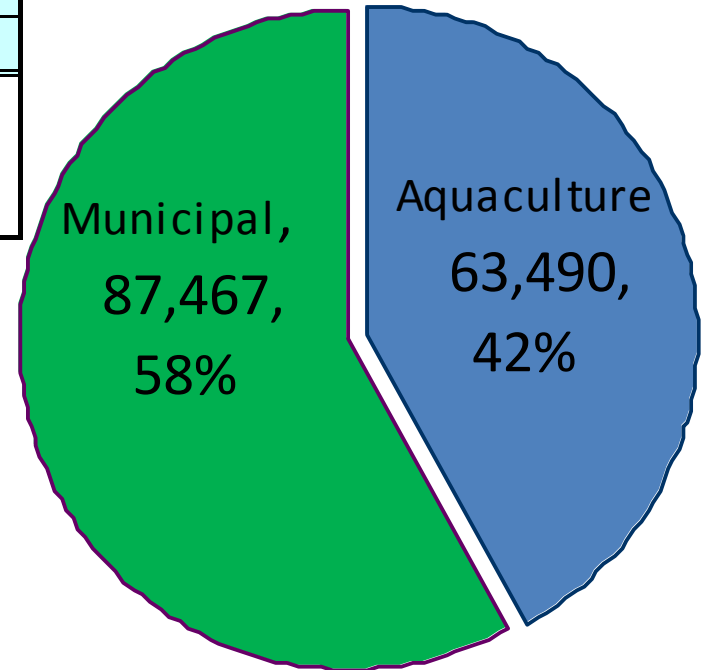
# Fish Production in Laguna de Bay CY 2012 (BAS)

## Municipal Production

Province	Production				
	2008	2009	2010	2011	2012
Laguna	42,875	38,499	37,294	37,784	37,949
Rizal	37,809	41,907	45,327	47,053	49,518
<b>Total</b>	<b>80,684</b>	<b>80,406</b>	<b>82,621</b>	<b>84,837</b>	<b>87,467</b>

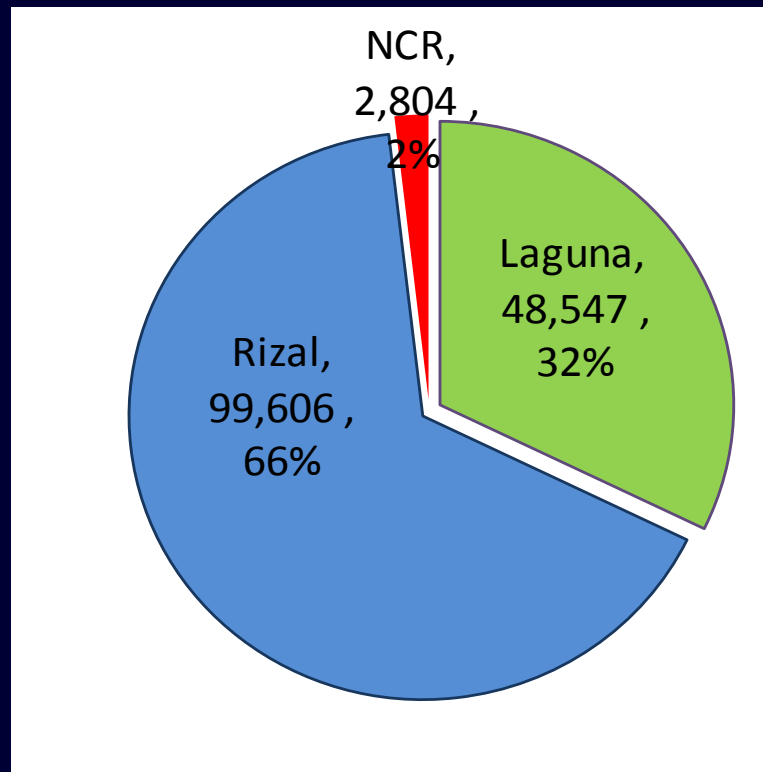
## Aquaculture Production

Province	Production				
	2008	2009	2010	2011	2012
Laguna	11,920	11,804	10,926	10,826	10,598
Rizal	53,614	45,411	48,999	48,999	50,088
NCR	3,053	2,137	2,229	2,709	2,804
<b>Total</b>	<b>68,587</b>	<b>59,352</b>	<b>62,154</b>	<b>62,534</b>	<b>63,490</b>



# Total Fish Production in Laguna de Bay CY 2012 (BAS)

Province	Production				
	2008	2009	2010	2011	2012
Laguna	54,795	50,303	48,220	48,610	48,547
Rizal	91,423	87,318	94,326	96,052	99,606
NCR	3,053	2,137	2,229	2,709	2,804
<b>Total</b>	<b>149,271</b>	<b>139,758</b>	<b>144,775</b>	<b>147,371</b>	<b>150,957</b>

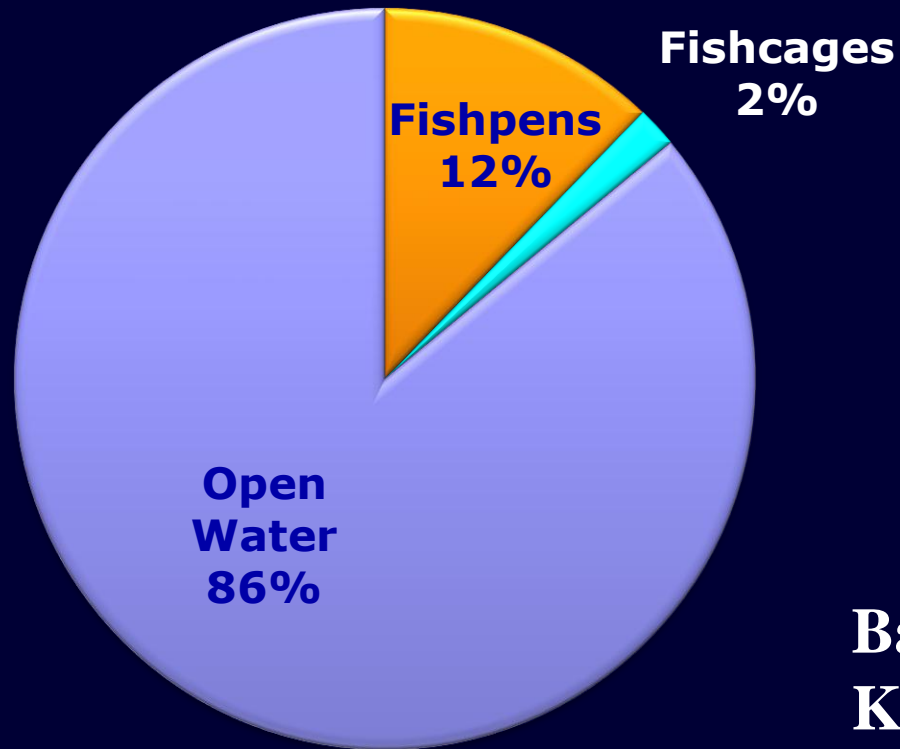


**NCR – from  
aquaculture only**

**Municipal  
Fisheries ???**



# Surface Area of Laguna de Bay = 90,000 hectares



Baklad  
Kangkungan





**Kangkong culture (*Ipomea sp.*) proliferates in areas designated as open areas in accordance with the ZOMAP**





# Baklad (fish trap)

- **Fishing method even before the advent of aquaculture**
- **No policy on baklad operation; no designated areas**



**The ZOMAP (1996) and  
the Fisheries Code of 1998 (RA 8550)**



## **SEC.51. License to Operate Fish Pens, Fish Cages, Fish Traps and Other Structures for the Culture of Fish and Other Fishery Products**

*“That not over ten percent (10%) of the suitable water surface area of all lakes and rivers shall be allotted for aquaculture purposes..... and the stocking density and feeding requirement shall be controlled and determined by its carrying capacity;*

*Provided, further, that fish pens and fish cages located outside municipal waters shall be constructed and operated only within fish pen and fish cage belts designated by the Department and after corresponding licenses therefore have been secured and the fees thereof paid.”*



**From 15,000 has. to 9,000 has.**

## **CARRYING CAPACITY??**

**for a single use or purpose – e.g. fisheries**

### **FOR A MULTI-USE RESOURCE ???**

**Thresholds:**

**Amount of wastes it can absorb and treat**

**Optimum lake level to meet the demands of the various users,  
etc**





# Snail Dredging



Fishing boat being used for snail dredging

Otter board with fine mesh net



About 2 tons of snails can be loaded in one fishing boat

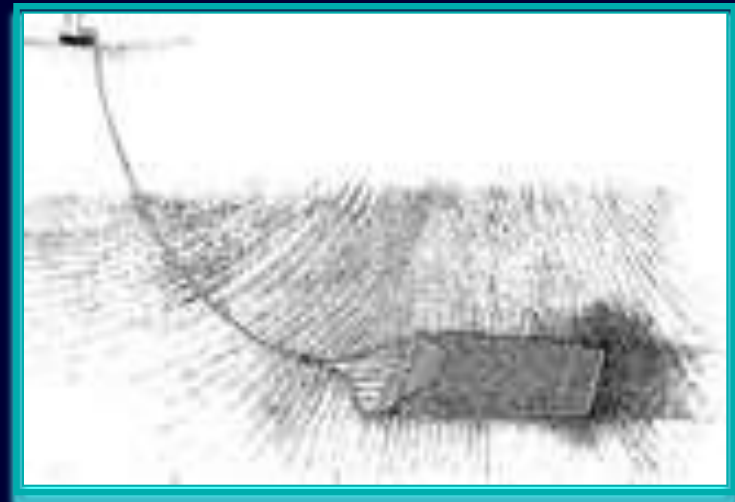
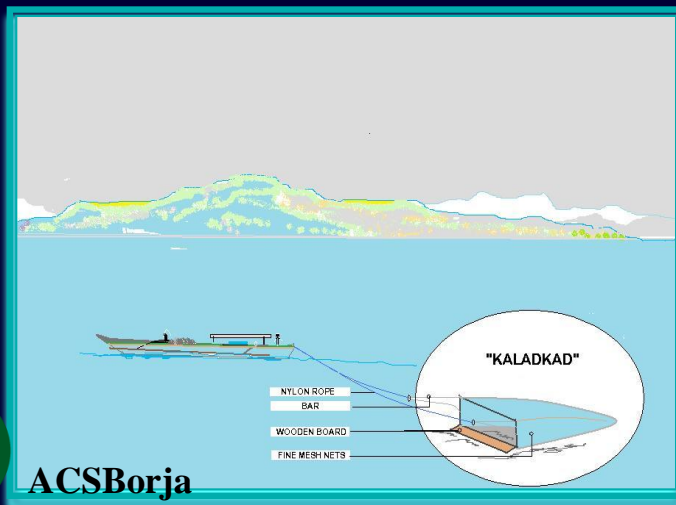
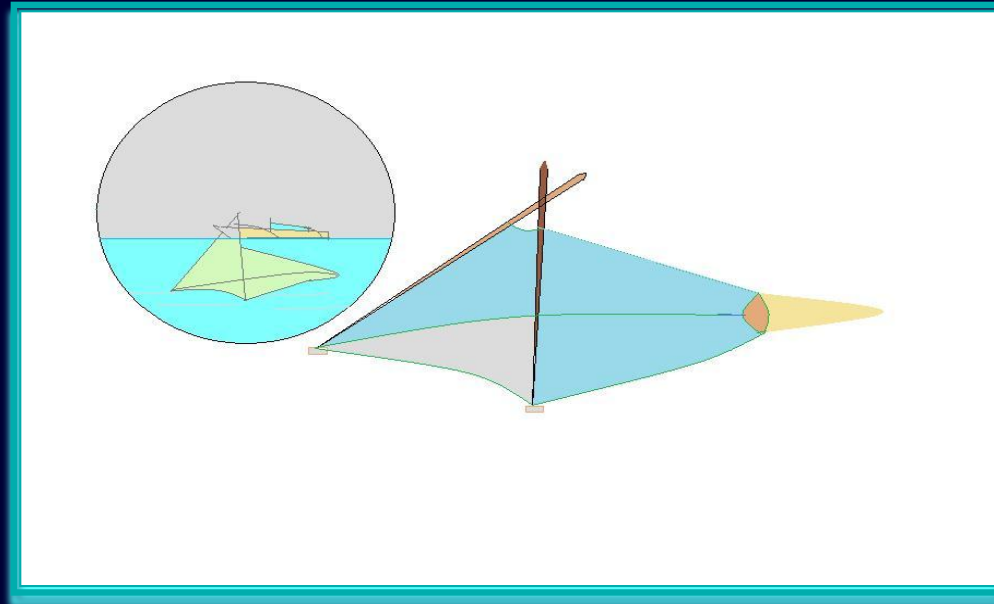


Ready for transport to Bulacan and Pampanga





# Illegal fishing



## **RA 8550:**

**The Secretary of Agriculture, upon the recommendation of BFAR Director, may:**

### **Rule 9.1. Establishment of Closed Season**

*Issue the appropriate FAO declaring a closed season regulation in a specific area, based on the findings of stock assessment studies, biological studies, other research studies or best available evidence;*

### **Rule 9.3. Closed Season in Municipal Waters**

*Include closed season regulations in waters under the jurisdiction of special agencies, municipal waters and bays, and/or other areas reserved for the use of the municipal fisherfolk upon the concurrence and approval or recommendation of such special agency and the concerned LGU and FARMC, in which case the concerned LGUs or special agencies shall, through appropriate municipal fisheries ordinance or resolution, cease to issue license/permits for fisheries activities in municipal waters and bays in closed area.*



## **SEC.10. Introduction of Foreign Aquatic Species**

**No foreign finfish, mollusk, crustacean or aquatic plants shall be introduced in Philippine waters without a sound ecological, biological and environmental justification based on scientific studies subject to the bio-safety standard as provided for by existing laws: *Provided, however,* That the Department may approve the introduction of foreign aquatic species for scientific/research purposes.**





# INTRODUCTION OF INVASIVE ALIEN SPECIES

- Janitor Fish
- Knife fish
- Soft-shelled turtle and snapping turtle





**Where's the water?**

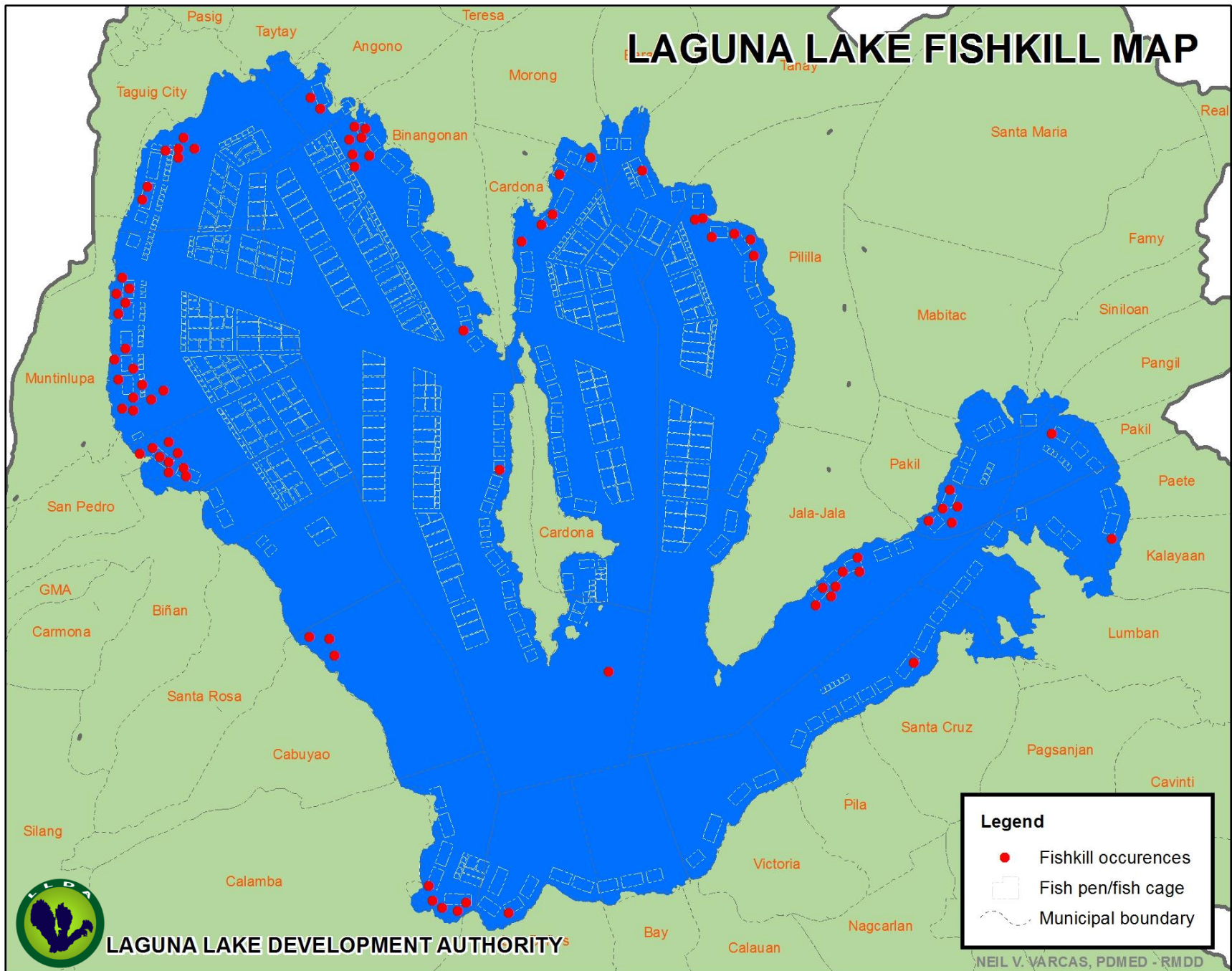
**HYPEREUTROPHIC !!**



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# LAGUNA LAKE FISHKILL MAP



**Legend**

- Fishkill occurrences
- Fish pen/fish cage
- - - Municipal boundary

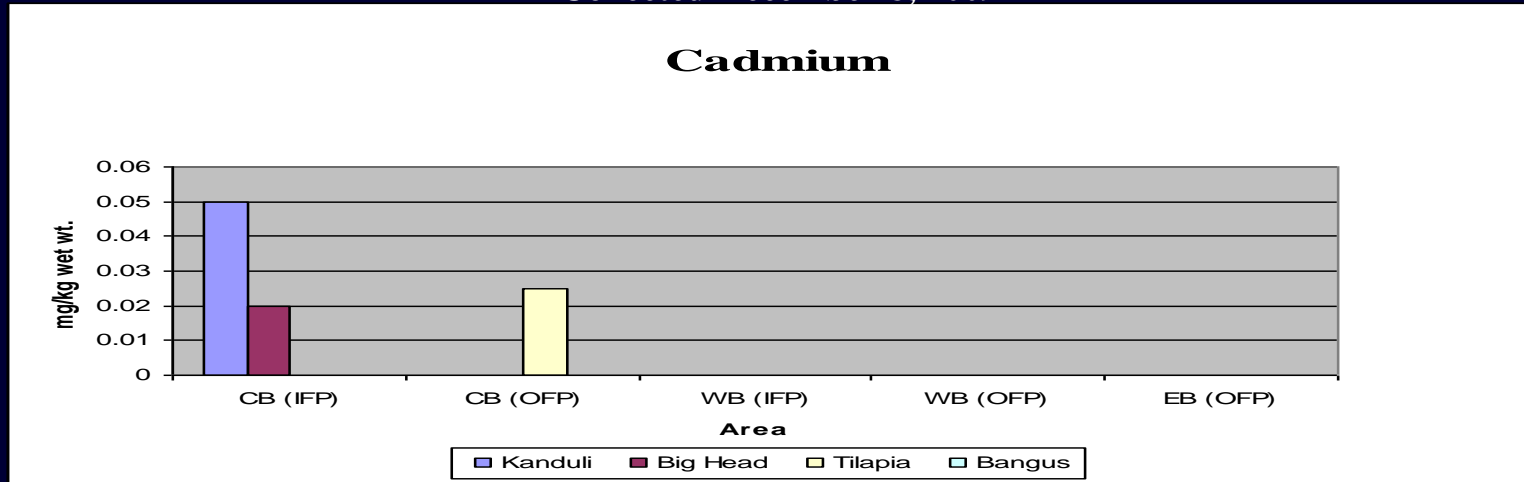


**LAGUNA LAKE DEVELOPMENT AUTHORITY<sup>s</sup>**

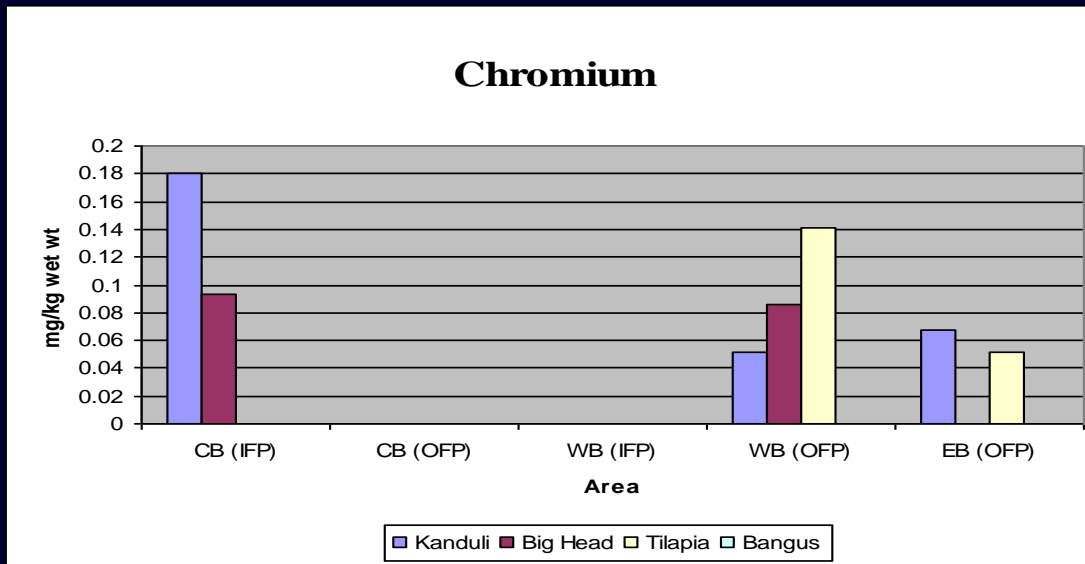
NEIL V. ARCAS, PMED - RMDD

# Concentration of Heavy Metals in Fish

Collected December 8, 2009



Codex / Food and Agriculture Organization (FAO) regulation limit is 2 mg/kg Cadmium in fish



#### Legend:

#### Fish:

Kanduli – Manila Sea Catfish

Big Head – Big Head Carp

Tilapia – St. Peter's Fish

Bangus – Milkfish

#### Area:

CB (IFP) – Central Bay, Inside Fishpen

CB (OFF) – Central Bay, Outside Fishpen

WB (IFP) – West Bay, Inside Fishpen

WB (OFF) – West Bay, Outside Fishpen

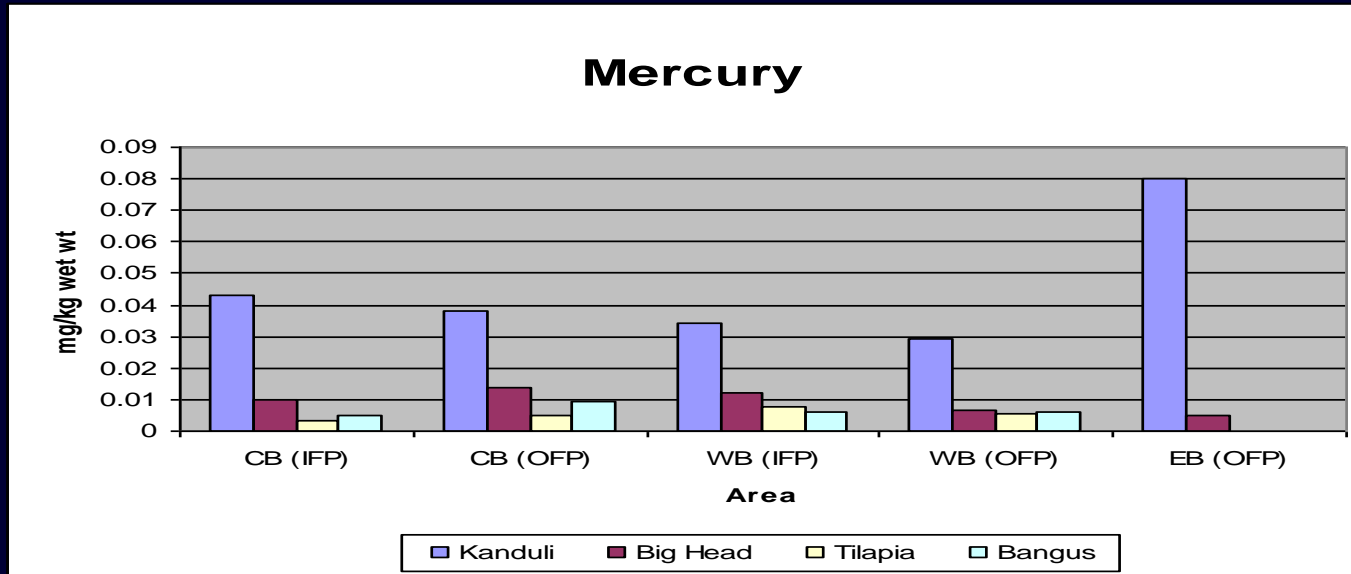
EB (OFF) – East Bay, Outside Fishpen

Codex / Food and Agriculture Organization (FAO) regulation limit is 1 mg/kg Chromium in fish.



# Concentration of Heavy Metals in Fish

Collected December 8, 2009



Codex / Food and Agriculture organization (FAO) regulation limit is 0.5 mg/kg Total Mercury in fish

#### Legend:

##### Fish:

Kanduli – Manila Sea Catfish

Big Head – Big Head Carp

Tilapia – St. Peter's Fish

Bangus – Milkfish

##### Area:

CB (IFP) – Central Bay, Inside Fishpen

CB (OFF) – Central Bay, Outside Fishpen

WB (IFP) – West Bay, Inside Fishpen

WB (OFF) – West Bay, Outside Fishpen

EB (OFF) – East Bay, Outside Fishpen





# RESEARCH INSTITUTE FOR HUMANITY AND NATURE

## Kyoto, Japan



**water samples from  
Laguna de Bay and  
tributary rivers**



# **RISK COMMUNICATION !**

**Apprehension of Fishermen and Aquaculture Owners**



# KEY QUESTIONS

**Laguna de Bay contributes :**

**\_\_\_\_\_ % to the total fish production in the region**

**\_\_\_\_\_ % to the total fish production in the country**

**PHP value ?**

**Contribution to the economy?**

**CHALLENGING QUESTION:**

**WITH OR WITHOUT FISHPENS AND FISHCAGES????**





A person is seen in a traditional wooden boat on a large body of water, possibly a lake or bay. The person is using a long pole to navigate the boat. In the background, there are large, hazy mountains under a clear sky. The water is dark and has some ripples.

**“Maraming Salamat Po!”**

**THANK YOU VERY MUCH!**



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